Claims

We claim:

1. A method of implementing an intelligent video surveillance system, comprising:

obtaining a frame sequence from an input video stream;

executing a first-pass method for each frame of the frame sequence, the first-pass method comprising the steps of:

aligning the frame with a scene model; and

updating a background statistical model; and

finalizing the background statistical model;

executing a second-pass method for each frame of the frame sequence, the second-pass method comprising the steps of:

labeling each region of the frame; and

performing spatial/temporal filtering of the regions of the frame;

identifying and classifying objects using the labeled and filtered regions; and

analyzing behaviors of at least one of the objects.

2. A computer-readable medium comprising software implementing the method of Claim 1.

3. An intelligent video surveillance system comprising a computer system comprising:

a computer; and

a computer-readable medium according to Claim 2.

4. A method of implementing an intelligent video surveillance system, comprising:

obtaining a frame sequence from a video stream;

for each frame in the frame sequence, performing the following steps:

aligning the frame with a scene model;

building a background statistical model;

labeling the regions of the frame; and

performing spatial/temporal filtering;

identifying and classifying objects based on the results of the labeling and filtering; and

analyzing behaviors of at least one object.

5. A computer-readable medium comprising software implementing the method of Claim 4.

6. An intelligent video surveillance system comprising a computer system comprising:

a computer; and

a computer-readable medium according to Claim 5.

7. A method of implementing an intelligent video surveillance system, comprising:

obtaining a frame sequence from a video stream;

for each frame in the frame sequence, performing the following steps:

aligning the frame with a scene model;

building a background statistical model and a secondary statistical model;

labeling the regions of the frame; and

performing spatial/temporal filtering;

identifying and classifying objects based on the results of the labeling and filtering; and

analyzing behaviors of at least one object.

8. A computer-readable medium comprising software implementing the method of Claim 7.

9. An intelligent video surveillance system comprising a computer system comprising:

a computer; and

a computer-readable medium according to Claim 8.

10. A method of implementing an intelligent video surveillance system, comprising:

segmenting video into foreground and background components, the segmenting comprising:

obtaining a sequence of video frames;

building and updating at least one background statistical model for each region of the video frames, based on the video frames; and

assigning labels to the regions, based on the at least one background statistical model;

identifying and classifying objects based on the labeled regions; and

analyzing behaviors of at least one object.

11. A computer-readable medium comprising software implementing the method of Claim 10.

12. An intelligent video surveillance system comprising a computer system comprising:

a computer; and

a computer-readable medium according to Claim 11.